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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/879,934	06/14/2001	Yasumi Sago	K-1984	4444

32628 7590 05/09/2005

HAUPTMAN KANESAKA BERNER PATENT AGENTS
SUITE 300, 1700 DIAGONAL RD
ALEXANDRIA, VA 22314-2848

EXAMINER	
KACKAR, RAM N	
ART UNIT	**PAPER NUMBER**
1763	

DATE MAILED: 05/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/879,934	SAGO ET AL.	
	Examiner	Art Unit	
	Ram N. Kackar	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 February 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *29-35,37-39,41-50,52-54 and 56-58* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *29-35,37-39,41-50,52-54 and 56-58* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 29, 31, 33-34, 37-39, 41-44, 46, 48-49, 52-54 and 56-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mountsier et al (US 5810933) in view of Moslehi (US 5936829).

Mountsier et al disclose an electrostatic chuck (Fig 1 and Col 1 lines 39-54), comprising a dielectric layer (Fig 1-4), chucking electrode (Fig 1-2), temperature control (Col 1 line 41 and Col 8 lines 40-49), chucking power source (Fig 1-14), marginal convex (Fig 11b-78), chucking surface concaves for heat exchange gas (Fig 11b), under pressure (Col 7 line 48), gas distribution concave (Fig 11b –74) which are deeper than heat exchange concaves (Fig 11b), gas distribution concaves formed in coaxial with the center of the stage (Fig 7), gas inlets connected to gas diffusion concaves at positions off the center of the stage (Fig 19a- 82 and Col 13 lines 50-60), the depth of heat exchange concaves being below 40 μm (Col 10 line 65) and the depth of gas diffusion concaves being 700 μm (Col 13 line 14), the contact area being 10% (Col 9 line 42), main body cooling cavity (Fig 3) and a heat conducting layer between dielectric and main body for cooling (Fig 5-54).

Area of gas diffusion concaves is indirectly disclosed to be at least 5% (on a wafer of 200 mm diameter (Col 11 line 37) and diffusion concave width of 0.5 to 2.5 mm (Col 13 line 16) and plan view of Fig 15a to 19 b will yield an estimate of at least 5%).

Mountsier et al disclose radial and circumferential gas diffusion concaves inside an outer circumferential concave, an inner circumferential concave (Fig 17a and 19a – the hexagonal shaped) and several alternative gas distribution structures, but do not explicitly disclose a plurality of inner circumferential concaves.

Moslehi discloses another chuck and discloses a plurality of circumferential concaves (Fig 3) containing gas inlet connected at the crossing of circumferential and radial concave (Fig 3-74).

Since additional inner circumferential concaves is an alternative and equivalent way for distributing heat transfer gas and helps in obtaining better uniformity closer to center as disclosed by Moslehi too, it would have been obvious for one of ordinary skill in the art at the time of invention to have additional circumferential concaves.

4 Claims 30, 32, 35, 45, 47 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mountsier et al (US 5810933) in view of Moslehi (US 5936829) as applied to claim Claims 29, 31, 33-34, 36-44, 46 and 48-49 and further in view of Sexton et al (US 6377437).

Mountsier et al in view of Moslehi is discussed above.

Mountsier et al as modified by Moslehi do not disclose lift pin provided in gas introduction channel.

Sexton et al disclose cooling gas flowing through lift pin holes (Abstract and Fig 9-46).

Therefore it would have been obvious for one with ordinary skill in the art at the time invention was made to use gas channel hole for dual purpose of lift pin hole as well as cooling gas channel to make the design simpler and economical.

Response to Amendment

Applicant's arguments filed 2/3/2005 have been fully considered but they are not persuasive.

The applicant argues that in prior art does not specifically disclose heat exchange concaves to be from 1 to less than 20 μm.

Mountsier et al disclose the heat exchange concaves to be shallower than 40 μm (Col 10 line 65). Furthermore Mountsier et al teach heat transfer coefficients of gap sizes of (5-100 μm) with respect to pressure (Fig 9 and Col 7 lines 30-56). In the viscous region above a pressure of 1 Torr, for a smaller gap heat transfer coefficient is higher. Therefore gap depth of up to 5μm is disclosed. Mountsier et al disclosure that a height of gap from 20 –35 μm is preferable does not suggest that a height of say 19.5μm will not work. A person of ordinary skill in the art looking at the disclosure of Fig 9 will not be motivated to ignore depth slightly less than 20 μm.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N. Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571 272 1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RK

PARVIZ HASSENZADEH
SUPERVISORY PATENT EXAMINER